Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1. (currently amended) A method for improving the format efficiency of a hard disk of a hard disk drive, the hard disk drive having a rotary actuator and a read/write head, the read/write head having a read element and a write element, the method comprising:

determining a radial position of the read/write head with respect to the hard disk;

calculating a varying spacing distance between the read element and the write element measured along each data track of the hard disk as a function of a radius of the hard disk, wherein the varying spacing distance between the read element and the write element varies from track to track at different distances from a center of the hard disk; and

writing data tracks on the hard disk at varying distances from ~~a~~ the center of the hard disk ~~so that edges of the data tracks form a radius of curvature that is different than a radius of curvature formed by edges of subsequent servo samples, wherein the radius of curvature of the edges of the data tracks and the radius of curvature of the edges of the subsequent servo samples are determined based on the varying spacing distance between the read element and the write element as the function of the radius of the hard disk~~ so that lengths of unused areas between data sectors and subsequent servo samples in each of the data tracks on the hard disk are substantially equal to the varying spacing distance between the read element and the write element as measured along a corresponding data track of the hard disk.

Claim 2. (previously presented) The method according to claim 1, further comprising determining lengths of the data tracks from a look-up table.

Claim 3. (previously presented) The method according to claim 1, further comprising determining lengths of the data tracks based on a determination of the arc of the rotary actuator, the determined position of the read/write head with respect to the hard disk, and a physical offset between the read element and write element.

Claim 4. (previously presented) The method according to claim 1, further comprising determining lengths of the data tracks based on an angular position of the rotary actuator.

Claim 5. (currently amended) A disk drive, comprising:

a rotary actuator;

a read/write head having a read element that is offset from a write element, wherein a distance between the read element and the write element along each data track of a hard disk varies from track to track at different distances from a center of the hard disk; and

at least one hard disk drive, wherein the hard disk drive is configured to write data to data tracks on ~~a~~ the hard disk at varying distances from ~~a~~ the center of the hard disk ~~so that edges of the data tracks form a radius of curvature that is different than a radius of curvature formed by edges of subsequent servo samples, wherein the radius of curvature of the edges of the data tracks and the radius of curvature of the edges of the subsequent servo samples are determined based on varying values of the offset between the read element and the write element as a function of a radius of the hard disk~~ so that lengths of unused areas between data sectors and subsequent servo samples in each of the data tracks on the hard disk are substantially equal to the varying distance between the read element and the write element as measured along a corresponding data track of the hard disk.

Claim 6. (previously presented) The hard disk drive according to claim 5, wherein a length of each data track is determined from a look-up table.

Claim 7. (previously presented) The hard disk drive according to claim 5, wherein lengths of the data tracks are based on a determination of the arc of the rotary actuator, a determined position of the read/write head with respect to the hard disk, and the offset between the read element and write element.

Claim 8. (previously presented) The hard disk drive according to claim 5, wherein lengths of the data tracks are based on an angular position of the rotary actuator.

Claim 9. (currently amended) A system for reading and writing data, comprising:

~~a rotary actuator;~~

a ~~read/write~~ head having a read element and a write element, wherein a distance between the read element and the write element along each data track of a hard disk varies from track to track at different distances from a center of the hard disk; and

at least one hard disk drive configured to write data to data tracks on a the hard disk at varying distances from a the center of the hard disk ~~so that edges of the data tracks form a radius of curvature that is different than a radius of curvature formed by edges of subsequent servo samples, wherein the radius of curvature of the edges of the data tracks and the radius of curvature of the edges of the subsequent servo samples are determined based on a varying offset between the read element and the write element as a function of a radius of the hard disk~~ so that lengths of unused areas between data sectors and subsequent servo samples in each of the data tracks on the hard disk are substantially equal to the varying distance between the read element and the write element as measured along a corresponding data track of the hard disk.

Claim 10. (previously presented) The system according to claim 9 wherein the length of each of the data tracks is determined from a look-up table.

Claim 11. (previously presented) The method according to claim 1, wherein writing the data tracks on the hard disk further comprises writing data tracks on the hard disk so that edges of the data tracks form a radius of curvature that is smaller than a radius of curvature formed by edges of the subsequent servo samples.

Claim 12. (previously presented) The disk drive according to claim 5, wherein the at least one hard disk drive is configured to write the data tracks on the hard disk so that edges of the data tracks form a radius of curvature that is smaller than a radius of curvature formed by edges of the subsequent servo samples.

Claim 13. (previously presented) The system according to claim 9, wherein the at least one hard disk drive is configured to write the data tracks on the hard disk so that

edges of the data tracks form a radius of curvature that is smaller than a radius of curvature formed by edges of the subsequent servo samples.

Claim 14. (currently amended) The system according to claim 9 wherein lengths of the data tracks between successive servo samples are based on ~~an arc of the rotary actuator,~~ a radial position of the ~~read/write~~ head with respect to the hard disk, and the varying ~~offset~~ distance between the read element and write element.

Claim 15. (new) The method according to claim 1 wherein a maximum areal space loss caused by the unused areas occurs near a middle radius of the hard disk.

Claim 16. (new) The method according to claim 15 wherein a minimum areal space loss caused by the unused areas occurs at the inner radius of the hard disk.

Claim 17. (new) The disk drive according to claim 5 wherein a maximum areal space loss caused by the unused areas occurs near a middle radius of the hard disk.

Claim 18. (new) The disk drive according to claim 17 wherein an areal space loss caused by the unused areas in at least some of the tracks is less than 7.7 nanometers.

Claim 19. (new) The system according to claim 9 wherein a maximum areal space loss caused by the unused areas occurs near a middle radius of the hard disk.

Claim 20. (new) The system according to claim 19 wherein an areal space loss caused by the unused areas on at least some of the tracks is less than 7.55 nanometers.